

Serial No.: Rule 1.53(b) Cont. of  
SN 10/418,088 filed 4/18/03

IN THE SPECIFICATION:

Page 1, after the Title and before the subheading "Technical Field," please insert the following new paragraph:

This application is a Rule 1.53(b) continuation application of Serial No. 10/418,088, filed April 18, 2003 which is a continuation of Serial No. 09/475,228, filed December 30, 1999, now U.S. Patent 6,611,820; which is a continuation application of Serial No. 08/849,468, filed June 9, 1997, now U.S. Patent 6,081,785; which is a U.S. National Stage of PCT/JP96/02924, filed October 8, 1996.

Page 4, fourth full paragraph, please amend as follows:

The present invention will be described on the basis of a number of embodiments. Herein, an additional recording area using the BCA system is referred to as a 'BCA area', and data recorded in a BCA is referred to as 'BCA data'. In addition, first identification data is referred to as 'ID' or 'disk ID'.

Page 5, second full paragraph to Page 7, line 9, please amend as follows:

As shown in Fig. 2a, a pulse laser 808 trims the reflecting aluminum films 809 of the two-layer disk 800801 in a BCA to record a stripe-like low reflection part 810 on the basis of a PE modulating signal. As shown in Fig. 2b, BCA stripes are formed on the disk. If the stripes are reproduced by a conventional optical head, the BCA has no reflecting signal. Therefore, as shown in Fig. 2c, gaps 810a, 810b and 810c are produced, where the modulating signal is missing. The modulating signal is sliced at the first slice level 915. But, the gaps 810a-c have a low signal level, and can therefore be sliced easily at the second slice level 916. As shown with the recorded and reproduced waveforms in Fig. 3Figs. 3a-3g, it is possible to reproduce the formed bar codes 923a and 923b by level-slicing them at the second slice level 916 by a conventional optical pickup as shown in Fig. 3e. As shown in Fig. 3f, the waveforms of the codes are shaped by a LPF filter so as to PE-RZ decode the codes. As shown in Fig. 3g, a digital signal is output.

With reference to Fig. 4, the decoding operation will be explained. A disk 801 with a BCA includes two transparent

substrates, which are laminated with a recording layer 801a between them. The recording layer may either be a single layer 801a or include two recording layers 800a and 800b. If there are two layers, a BCA flag 922 is recorded in the control data of the first recording layer 800a, which is adjacent to the optical head 6. The flag 922 indicates whether a BCA is recorded or not. Because a BCA is recorded in the second layer 800b, the first recording layer 800a is focused on first, and the optical head 6 is moved to the radial position of the control data 924 in the innermost edge of the second recording area 919. The control data is main data, and has therefore been Eight to Fourteen Modulation (EFM), 8-15 or 8-16 modulated. Only when the BCA flag 922 in the control data is '1', a single/double layer switching part 827 focuses on the second recording layer 801b to reproduce the BCA. If the signal is sliced by a level slicer 590 at the general first slice level 915 as shown in Fig. 2c, it is converted into a digital signal. This signal is demodulated in the first demodulation part by an EFM demodulator 925, an 8-15 modulator-demodulator 926 or an 8-16 modulator-demodulator 927. An ECC decoder 36 corrects errors, if any, and outputs main data. The control data in the main data is reproduced and only if the BCA flag 922 is 1 is the BCA read. When the BCA flag 922 is 1,

Serial No.: Rule 1.53(b) Cont. of  
SN 10/418,088 filed 4/18/03

a CPU 923 orders the single/double layer switching part 827 to drive a focus adjustment part 828, switching the focus from the first recording layer 801a800a to the second recording layer 801b. At the same time, the optical head 6 is moved to the radial position of the second recording area 920, that is, for the DVD standard, the BCA is recorded between 22.3 and 23.5 mm from the inner edge of the control data. Then the BCA is read. Reproduced in the BCA area is a signal with a partially missing envelope as shown in Fig. 2c. By setting in the second level slicer 929 the second slice level 916 of which the quantity of light is smaller than that of the first slice level 915, it is possible to detect the missing parts of the reflecting portion of the BCA, and a digital signal is output. This signal is PE-RZ demodulated by the second demodulation part 930, and ECC decoded by an ECC decoder 930b so as to output BCA data, which is auxiliary data. Thus, the first demodulator 928, operative according to, 8-16 modulation demodulates and reproduces the main data, while the second demodulation part 930 operative according to PE-RZ modulation demodulates and reproduces the auxiliary data, that is, the BCA data.